

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/04616

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B25B 13/46

US CL : 81/63.1, 58.1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 81/63.1, 58.1, 58.4, 60, 61, 62, 63.2, 59.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|---|
| X | US 3,575,069 A (WHITE) 13 April 1969 (13.04.1969), see entire document. | 1-5, 7-10, 14 |
| Y | | 6, 11, 13, 15, 29, 30 |
| Y | US 3,823,625 A (MYERS) 16 July 1974 (16.07.1974), see entire document. | 6 |
| Y | US 3,824,881 A (WRIGHT) 23 July 1974 (23.07.1974), see entire document. | 29, 30 |
| X | US 4,054,067 A (BLANK) 18 October 1977 (18.10.1977), see entire document. | 1-5, 7-10, 12, 16, 18, 19, 22 |
| Y | | 6, 11, 13, 15, 17, 20, 21, 24, 25, 29, 30 |
| A | US 4,212,336 A (SMITH) 15 July 1980 (15.07.1980), see entire document. | 1-30 |
| Y | US 5,596,913 A (MATSUBARA et. al.) 28 January 1997 (28.01.1997), see entire document. | 11, 20 |

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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document member of the same patent family

Date of the actual completion of the international search

18 August 2004 (18.08.2004)

Date of mailing of the international search report

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|--|
| Y | US 6,482,536 B1 (ROBERTS et. al.) 06 February 2001 (06.02.2001), see entire document. | 15, 21 |
| Y | US 2003/0121371 A1 (CHIU) 03 July 2003 (03.07.2003), see entire document. | 15, 21 |
| X | US 2003/0131692 A1 (HUANG) 17 July 2003 (17.07.2003), see entire document. | 1-5, 7-10, 12, 16, 18, 19, 23, 26-28 |
| — | | |
| Y | | 6, 11, 13, 15, 17, 20, 21, 24, 25, 29, 30 |